Community and Employee Noise Survey

HMMH Report No. 301310
January 16, 2006

Prepared for:

Wag Pet Hotels
West Sacramento, CA

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Prepared for:

Wag Pet Hotels
1759 Enterprise Boulevard
West Sacramento, CA 95691

Prepared by:

Ken Seymour

HARRIS MILLER MILLER & HANSON INC.
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EXECUTIVE SUMMARY

Wag Pet Hotel retained Harris Miller Miller & Hanson Inc. (HMMH) to conduct an employee and community noise survey of its West Sacramento, CA facility. This project had two primary objectives:

1. Obtain exterior noise level information to support the permitting of new potential Wag Pet Hotels as the company expands to other major metropolitan areas.
2. Determine employee noise exposures per Occupational Safety and Health Administration (OSHA) standards as prescribed in 29 CFR, 1910.95, Occupational Noise Exposure.

At the direction of Mr. Lieneke, Wag Pet Hotel's CEO and President, HMMH completed the noise measurements for the survey over the Christmas weekend as Mr. Leineke expected the hotel to be at peak residency. During the survey, the noise monitors measured the following:

Maximum exterior noise levels of 62 dB[1] attributed to barking dogs inside the hotel

Employee noise exposures of 81 to 83 dBA TWA

The employee noise exposures measured are well below the OSHA criteria for hearing protection of 90 dBA TWA and below the OSHA requirement for providing a Hearing Conservation Program (HCP) of 85 dBA TWA. However, employees are subjected to noise levels greater than 105 dB while tending to the pets. Although not required by OSHA standards, HMMH recommends that hearing protection be made available to the employees upon entering these high noise level areas.

[1] Ambient noise levels, the noise levels in the absence of the noise source of interest (dogs barking), were not 10 dB or greater below the noise source of interest. Therefore, HMMH estimated the actual dog barking noise levels by subtracting the estimated ambient noise levels from the measurements.

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1 INTRODUCTION

Wag Pet Hotels (Wag) is a new start-up business providing up-scale kennel and pet boarding facilities for dogs and cats in major metropolitan areas. The Sacramento facility is the company's flagship hotel and recently opened in November, 2005. Wag Pet Hotel retained Harris Miller Miller & Hanson (HMMH) to assess the community and employee noise exposure at its West Sacramento, CA facility during a period of peak occupancy occurring over the Christmas weekend of 2005. Wag sought to measure the maximum noise exposure inside and outside the facility under a "worst-case" high-occupancy condition.

The two objectives for the noise monitoring were:

1. To document noise levels outside of the Wag Pet Hotel's West Sacramento facility during a period of peak occupancy to support the permitting of potential new Wag Pet Hotels as the company expands to other major metropolitan areas.
2. Conduct a facility noise survey and employee noise dosimeter monitoring to determine if employee noise exposure meets or exceeds Occupational Safety and Health Administration (OSHA) standards as prescribed in 29 CFR, 1910.95, Occupational Noise Exposure.

1.1 Wag Pet Hotel Facility Description

Wag's Sacramento facility is located at 1759 Enterprise Blvd., West Sacramento, CA 95691, which is in a light industrial park primarily occupied by warehouse and distribution facilities. Wag's reception lobby, kennels, play area and offices occupy one-half the total space of a leased warehouse. The Wag facility encompasses 30,200 square feet. Figure 1 provides an aerial photograph showing the relationship of Wag's West Sacramento facility to the surrounding area and Figure 2 displays the generalized floor plan of the facility.

The building is constructed of cast-in-place concrete walls and a trussed roof of ballasted corrugated sheet metal. The facility has a custom-designed interior that includes floor to ceiling partition walls with sound-damping materials applied and epoxy coated concrete floors in animal care areas.

There are two primary kennel areas located in the center portion of the facility, between the reception lobby and play areas. These kennel areas are designated as the Red Room and the Green Room based on the color of the walls and floors. The Red Room is 6,654 square feet and contains 100 kennels. The Green Room is 6,207 square feet and contains 41 kennels and 12 luxury suites. Both of the kennel areas have drop-down acoustical tile ceiling overlaid with bat insulation; ducts for the air exchange system penetrate the ceilings and roof. The Red and Green rooms have no exterior doors.

The play area located at the back of the facility is approximately 6,582 square feet. It is divided by sections of five-foot tall vinyl plastic fence into 6 play areas, one equipped with a pool surrounded by ramps and decking. The area between roof trusses is insulated with bat insulation and ducts for the air exchange system penetrate the roof. There are two high-bay roll-up steel doors in the east wall of the play area, across which Wag has constructed open grillwork steel security gates with wire mesh to contain dogs in the facility. The high bay doors are kept open for the majority of the day and open onto an unused rail spur and the backs of adjacent warehouses.

Table 1 provides the typical schedule for guests and staff, though the schedule will vary depending on occupancy and staffing.

Figure 1 Wag Pet Hotel Sacramento Location

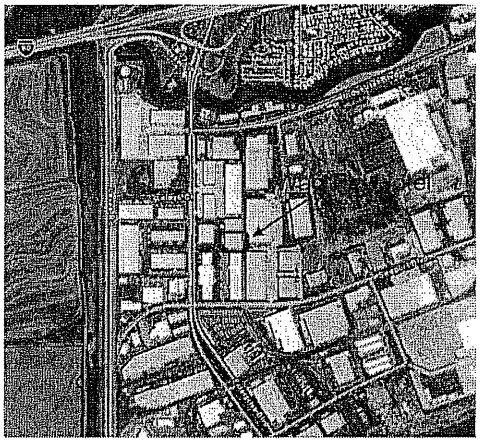

Figure 2 WAG Pet Hotel West Sacramento Floor Plan

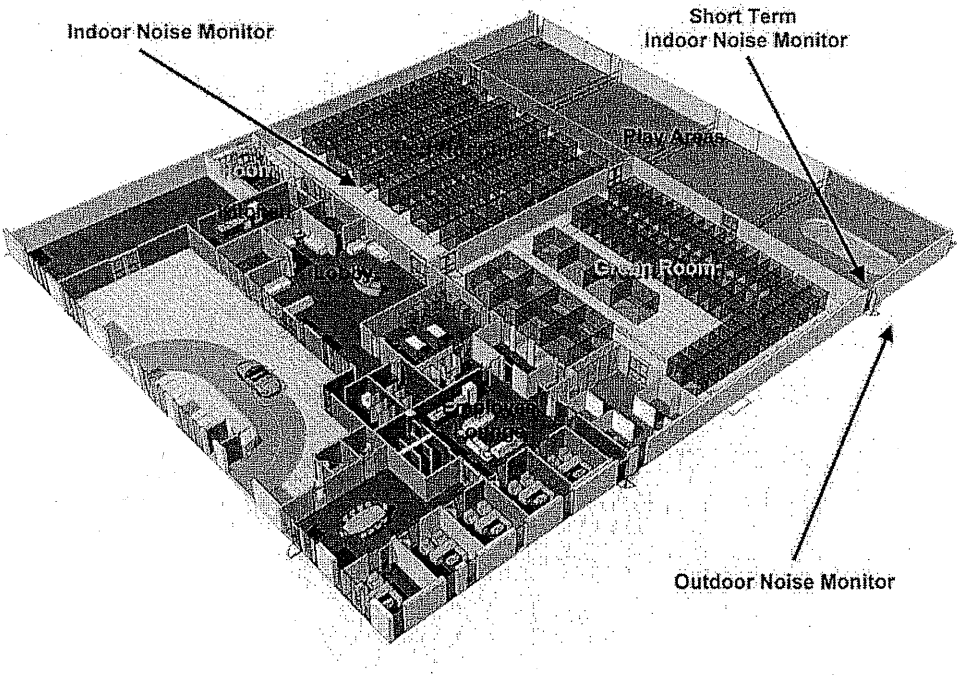

Table 1 Wag Pet Hotel Daily Schedule

Approximate Time (times vary depending on occupancy and staffing)	**Activity**
3:00 am to 5:30 am	Food preparation in kitchen for morning feeding.
Between 5:30 am and 6:00 am	Lights come up in kennel areas.
6:00 am to 7:00 am	Morning feeding and removal of feeding dishes.
7:00 am to completion	Prescription medications given to animals requiring them.
Between 8:00 am and 2:00 pm	Dog play groups & special services.
2:00 pm to 4:30 pm	Food preparation in kitchen for evening feeding.
4:00 pm to 6:00 pm	Evening feeding and removal of feeding dishes.
5:00 pm to 10:00 pm	Dog play groups & special services.
10:00 pm	Lights go down in kennel areas.
10:00 pm to 6:00 am	Rest time for guests.

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2 COMMUNITY NOISE EXPOSURE

2.1 Background

The goal of community noise ordinances is to promote compatible adjoining land uses. To do this, they define acceptable noise limits and conditions to provide protection for both parties. Noise ordinances define what a community considers "reasonable" but do not guarantee inaudibility or prevent annoyance at all locations.

Community noise ordinances vary significantly in their format. The most objective ordinances establish maximum permissible noise levels and durations measured at the property line Many noise ordinances use time as the key determination of compliance, i.e., a noise source can be heard for x minutes during any one hour between certain hours. Compliance is shown by determining the amount of time the noise level will be above the ordinance noise level.

Ordinances may use an energy averaged noise level (Leq) for the full or a subset of a specified monitoring period, or the maximum A-weighted sound level recorded during an enforcement visit. Some ordinances make allowances for background noise and specify that a noise source must exceed the ambient noise level by a given amount to be considered incompatible. Some ordinances establish different levels for daytime and nighttime noise, though the day and nighttime definitions can vary, as do the levels specified.

This approach with clearly delineated standards, variable as they may be from community to community, is not universal. Some noise community noise regulations rely on the judgment of enforcement official to make a determination as to whether or not to call a noise source or event an infraction. The most subjective of all ordinances rely only on enforcement officials receiving a number of complaints to establish that a noise source is a nuisance.

Zoning regulations too are generally vague in dealing with permissible noise limits, relying only on separating disparate types of land uses to maintain compatibility and on construction standards to promote reduction of interior noise levels in noise sensitive areas.

While many individual community's ordinances provide clearly understandable standards, variations in background noise level, distance to noise sensitive receivers, community values, and the attitudes of individual observers make it impractical to provide Wag Pet Hotels with a universal and clear-cut definition of what is an acceptable noise level outside of its facilities. However, in general, if the noise level is commensurate with that of surrounding land uses it is likely to be judged compatible with its surroundings.

Wag has established in its business model that it will continue to seek light industrial warehouse space to host its future expansion. Activities within these areas generally consist of automobile traffic and a moderate level of tractor-trailer truck activity.

HMMH measured three key descriptors of noise both inside and outside the Wag facility to provide a basis for quantifying the noise exposure from the West Sacramento Facility and that which might reasonably be expected to emanate from future facilities. Those metrics are Hourly Equivalent Sound Level (Leq) and Maximum Sound Levels (Lmax) and Statistical Sound Level (Ln). Descriptions of the noise metrics and acoustic terminology used in this report are provided in

Appendix A. The results provided in Section 2.3 provide representative noise levels that may be expected from future facilities, although variations in building construction and the arrangement of facilities my result in slightly different levels.

2.2 Testing Methodology

HMMH surveyed the Wag's West Sacramento facility to determine locations to place noise-monitoring equipment. During the survey, a precision Type I sound level meter was employed to obtain A-weighted noise levels from a variety of locations in and around the facility.

A precision Type I sound level meter was placed outside the south facade of the facility, 10 feet from a personnel entry door to acquire sample Leq, Lmax and Ln data outside the facility. Figure 2 shows the approximate location of the outdoor noise monitor.

While the high-bay doors at the rear of the facility present the most significant acoustical vulnerability, especially because they remain open during much of the day, the location outside a personnel door was selected to be more representative of conditions likely to be encountered at future facilities. The West Sacramento facility has high bay doors at the back only to provide former tenants access to a now unused railroad spur running behind the East facade of the structure. High-bay doors at the rear are not typical of all such warehouses and are not anticipated at future Wag Pet Hotel locations. Because the testing was specifically intended to support permitting of additional Wag facilities, testing outside a conventional personnel access door was believed to be more representative of conditions that will be encountered at future locations.

2.3 Testing Results

During an exterior survey of the building and in subsequent monitoring, HMMH detected audible dog barking sounds from inside the facility emanating from four locations: (1) the roof, presumably from the vents of the air exchange system; (2) a structural expansion joint on the building's south facade; (3) the high bay doors on the east facade; and (4) the personal entry door at the south end of the Play Area. The sound detected coming from the roof and the expansion joint was barely detectable. The sound of dogs barking emanating from the roof area was only heard on Christmas Eve when the ambient noise in the industrial park was extremely low. Neither source was measurable above ambient, but was recognizable only because of the tonal and temporal nature of the sound. Aside from the high-bay doors previously discussed, HMMH determined that the personal door is the principal acoustic vulnerability likely to be present in future facilities.

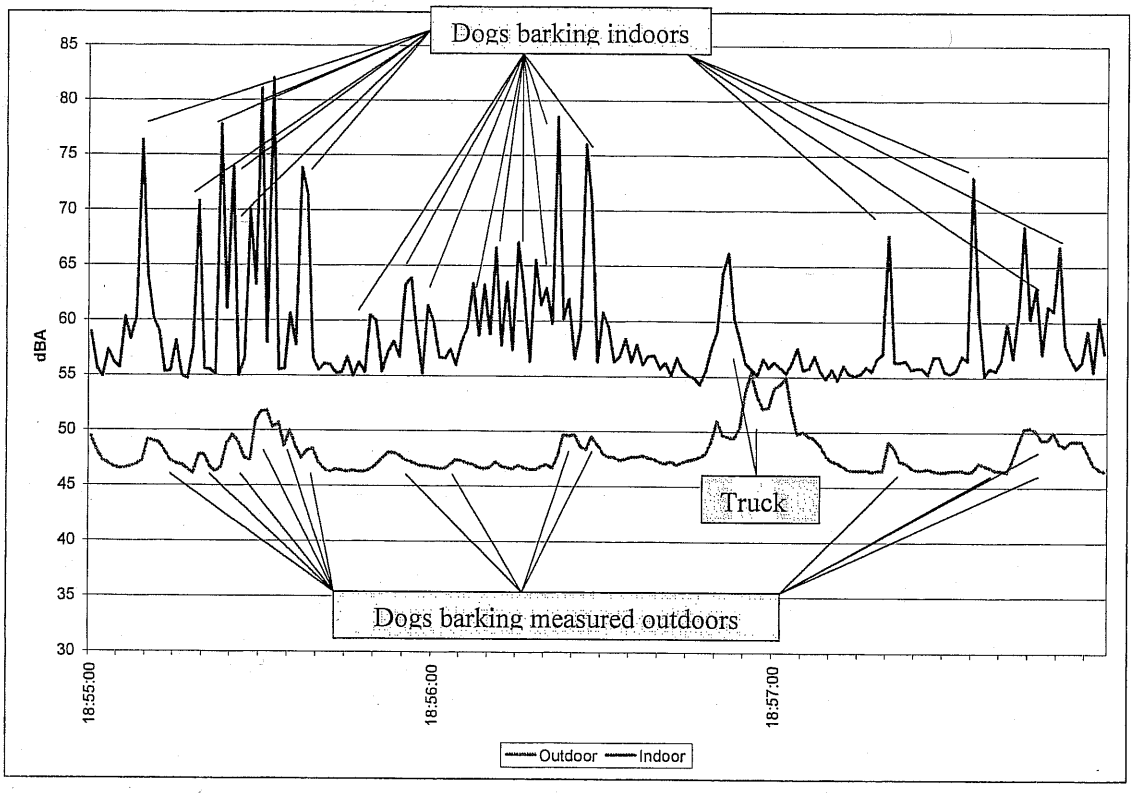
Figure 3 provides a comparison of indoor and outdoor noise levels measured at the personnel door. The upper red line on the graph shows noise levels sampled inside the play area in the vicinity of the personnel door. The blue lower line shows the corresponding time period outside the facility. These measurement were taken when outdoor community noise levels were at low levels; while indoors two active play groups were underway, one of 13 large dogs, the second consisting of 6 smaller active dogs.

In this representative sample, the indoor levels ranged from approximately 60 to 82 dBA, while the outdoor levels were just detectable above background noise with a maximum of 52 dB. This door provides an approximate 30 dB in noise level reduction. Variations in the difference of measured noise level reduction are a result of the location of the dogs within the play area when the barking occurred. In addition, the high-bay door was open at the time of the measurements reported in

Figure 3. This opened door provided an additional path for noise to travel from the Play Area to the outdoor noise monitor. While the strongest acoustical path was through the personnel door, the high-bay door provided slightly time-delayed noise that added to the noise coming through the personal door. As a result, the outdoor events are approximately ½-second longer in duration than the indoor events and slightly louder from what would be measured if the high-bay door was closed or did not exist.

Vehicular traffic, a delivery truck on Seaport Blvd. at a distance of approximately 700 feet, is the loudest noise event measured on the outdoor monitor during this particular sample with an Lmax of 55 dB. Appendix D provides the complete 24-hour noise measurement data sampled at the outdoor location. Measured levels of Wag-related and community-related noise during the 24-hour monitoring period shows the traffic and community noise routinely exceeded the sounds of dogs barking in the Wag Play Areas by from 5 to as much as 20 dB. It should also be noted that the monitoring period began the evening of Monday, December 26th, a national holiday. Therefore, traffic levels were likely below normal, resulting in lower local community noise than normal. The lower than normal ambient aided in our ability to measure the noise levels from the barking dogs inside the facility.

Figure 3 Outdoor vs. Indoor Noise Levels



The noise data determined that the maximum of outdoor noise attributable to barking dogs is up to 62 dB at a distance of 10 feet from the building. At these levels, noise from dogs barking is not

expected to cause outdoor speech interference at neighboring facilities, one key cause of annoyance, since speech interference begins at about 65 dB[2]. Figure 4 shows the predicted exterior noise levels from barking dogs as a function of distance away from the building. Based on the measurement data acquired for this project, Wag can expect the noise levels from barking dogs to be less than 50 dB at 40 feet. The purpose of this graphic is for Wag to determine the expected maximum noise level at the nearest property lines of future hotels to show compliance with the local noise ordinance.

Figure 4 Calculated Propagation Loss

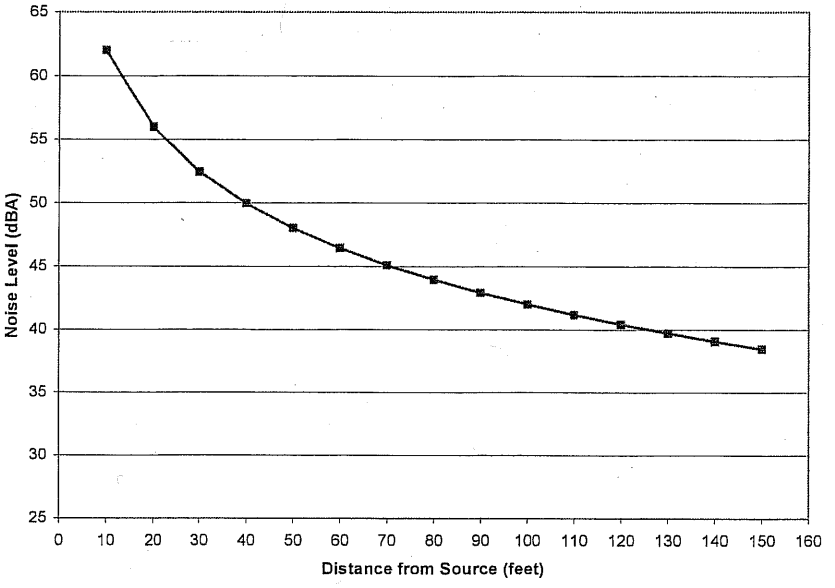


Table 2 shows the levels exceeded at the outdoor noise monitor for the percentage of time described by the subscripted label in the left hand column (i.e. L_1 is the level exceeded for 1% of the time during the 24 hour monitoring period). It is significant to note that these statistical levels are for all sources, both community and dog noise. Even allowing for community noise events the 60 dBA value for L_1 and 47 dBA value for L90 are typical of rural farm settings not an industrial park. The fact that the monitor obtaining these readings was located 10 feet outside of Wag helps show how little of the indoor activity is transmitted outdoors. On a day when activity levels in the industrial park are more near normal, Wag activity is expected to be virtually unnoticeable.

Table 2 Statistical Noise Levels Outside Wag Pet Hotel

Statistical Level	Exceedance Level	Statistical Level	Exceedance Level
L_1	60 dBA	L_{50}	50 dBA
L_{10}	54 dBA	L_{90}	47 dBA
L_{33}	51 dBA	L_{99}	45 dBA

[2] Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety (EPA 550/9-74-004), U.S. Environmental Protection Agency, March 1974. This document is commonly referred to as "The Levels Document".

3 EMPLOYEE NOISE EXPOSURE

3.1 Background

The Occupational Health and Safety Administration (OSHA) provides employee hearing conservation standards in 29 CFR 1910.95. As part of these standards, OSHA outlines survey, testing and employee hearing conservation program requirements for employers to follow whenever there is reason to believe that employees are subject to noise levels that have the potential to cause hearing impairment. Two measures of employee noise exposure are to be considered; the employee dose received during a shift and the maximum noise exposure experienced.

Under 29 CFR 1910.95 employers are required to provide protection against the effects of noise exposure when the employee noise dose exceeds those shown in Table 3. Measured employee exposure to Time Weighted Averages (TWA) for shift durations shown in Table 3 are referred to as the Permissible Exposure Level (PEL). This table may be used to determine the maximum amount of time an employee can be subjected to a TWA noise level. For example, if an operation or area had a TWA noise level of 95 dBA, an employee could be exposed to this noise for up to 4 hours without hearing protection being required per OSHA regulations. This assumes that the employee was exposed to noise levels less than 80 dBA TWA the remainder of the eight-hour work day. As the noise level increases, permissible exposure time decreases.

Table 3 Permissible Exposure Level as a function of time

Duration Per Day, (Hours)	Time Weighted Average (dBA, Slow Response)
8	90
6	92
4	95
3	97
2	100
1½	102
1	105
½	110
¼ or less[1]	115
Notes: 1) If employees are exposed to noise of 115 dBA, regardless of duration, hearing protection is required.	

When employees are subjected to sound at or above those listed in Table 3, administrative or engineering controls must be employed to mitigate that exposure. Administrative controls are changes in the work schedule or operation designed to reduce overall employee exposure to noise. Engineering controls are any modification or replacement of equipment, or related physical change

at the noise source or along the transmission path that reduces the noise level at the employee's ear. Use of employer provided personal protective equipment (ear plugs or ear muffs) is one example of an engineering control. In addition to any administrative or engineering controls, employers whose employees are subject to noise capable of resulting in a 90 dBA TWA dose are required to establish a Hearing Conservation Program (HCP).

Employee noise exposure need not meet or exceed the dose levels shown in Table 3 to require that employers initiate hearing conservation action to protect their employees. The employer must administer a continuing and effective HCP whenever employee noise exposures are at or above an eight-hour TWA of 85 dBA. Per OSHA guidelines, HCP's include:

- Employee training and education
- Supervisor involvement
- Noise measurement
- Audiometric monitoring and record keeping

29 CFR 1910.95(i)(1) requires that employers make hearing protectors available at no cost to all employees exposed to a TWA of 85 dBA. To take a conservative approach towards employee hearing protection, HMMH recommends that areas where noise levels with the "potential" to result in an 8-hour 50% dose of 85 dBA TWA be posted as "high noise areas" to alert employees that hearing protection may be a prudent precaution during periods of maximum exposure.

3.2 Testing Methodology

HMMH surveyed the facility to determine the best locations to place fixed monitoring equipment. During the survey, HMMH obtained A-weighted noise levels, with the monitor set to slow response, in close proximity to a variety of barking dogs held in kennels in both the Red and Green rooms. This survey was used to obtain representative noise levels experienced by employees during the course of their work days.

During the survey, employees stated that the Red Room was generally the louder of the two kennel areas. As a result of employee input, as confirmed by measurements taken during the survey, HMMH placed a precision Type 1 Sound Level Meter in the Red Room at the location indicated in Figure 2. The meter remained in place for a 24-hour period beginning at approximately 6:30 am on December 24, 2005. That monitor obtained a continuous history of noise levels within the Red Room.

December 24th was the peak occupancy time for the Christmas weekend with between 124 and 169 dogs being boarded at the facility; as such it could reasonably be expected to result in the highest overall noise levels that employees will experience throughout the year. During the December 24/25 monitoring period, Red Room occupancy ranged between 101 and 102 dogs in the 100 available kennels. The meter was again set up in the Red Room on December 26, 2005 and remained in place for an additional 24 hours to capture data more representative of a "very busy" period, which is less than peak occupancy. During the December 26/27 monitoring period, Red Room occupancy ranged from 61 to 80 dogs.

To obtain employee noise dose information during representative 8-hour shifts, two employees were equipped with a Larson·Davis Spark 706 personal noise dosimeter. The first monitoring period began at 6:05 am on December 24th and ended eight hours later at 2:05 pm. This was the period of peak occupancy. The second monitoring period began at 11:21 am on December 26th and terminated

at 7:21 pm. The second monitoring period was representative of a very busy day, more typical of exposure that might be experienced during any other holiday weekend.

During these monitoring periods, the employees were engaged in a representative range of tasks for individuals with their job description. Activities took them into all areas of the facility including the lobby, kitchen, kennel rooms, play area and employee break rooms. Tasks performed by these employees during monitoring included:

- Preparation of food
- Distribution of food to individual dogs
- Dispensing medications
- Moving dogs from their kennels to play areas
- Supervising animals in the play areas
- Cleaning the facilities (including use of pressure washers and floor cleaning machine)
- Washing dishes
- Providing special services such as walks
- Meal and comfort breaks

3.3 Testing Results

Figure 5 shows a graph of data taken from an employee dosimeter. It reveals the rapid changes in noise levels experienced by employees as they move through the kennel areas and the range of levels experienced during the course of their work. In this sample, the maximum noise level (Lmax) measured was 103.7 dBA at 6:53 am and the minimum level measure of 53.3 dBA at 6:47 am.

Figure 5 Sample Hour of Employee Exposure

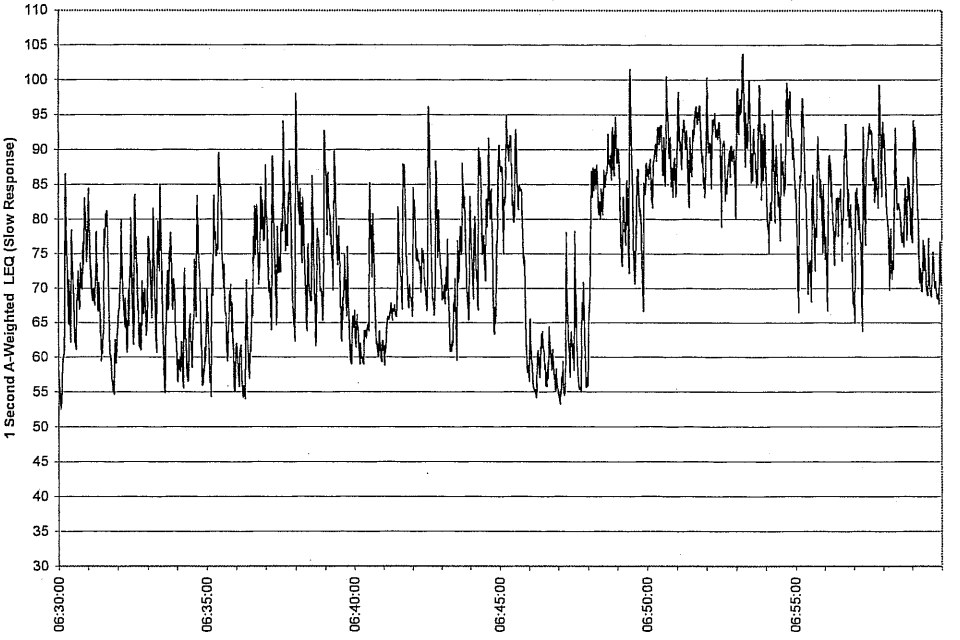


Table 4 summarizes the employee noise exposure recorded by the dosimeter monitoring. The higher employee dose recorded corresponded to the peak occupancy on December 24th. During that monitoring period, the dosimeter reported an exposure of 83 dBA TWA. The recorded dose on December 26th was 81 dBA TWA. These levels do not require employees to wear hearing protection, nor the employer to establish an HCP.

Table 4 Summary of Dosimetry Reports

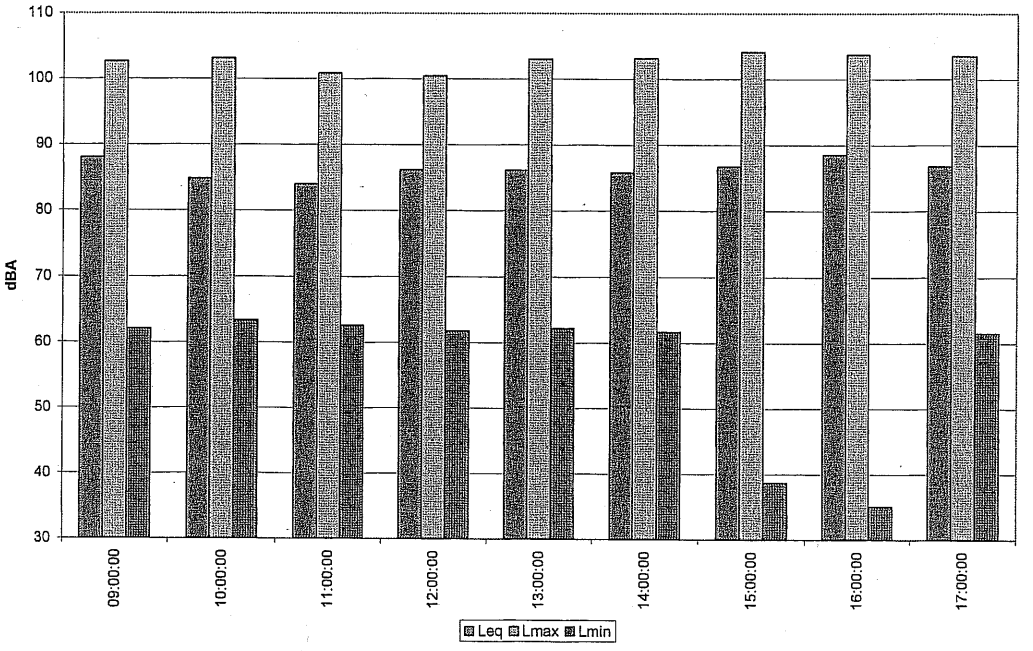
Metric	Kelly 06:05:55 to 14:05:58 December 24, 2005	Anna 11:20:39 to 19:21:00 December 26, 2005
Dose	36.9%	26.8%
Leq	87.4 dBA	85.0 dBA
TWA	82.8 dBA	80.5 dBA
Lmax	115.8 dBA	108.8 dBA

The complete one-second time histories of the noise levels experience by each employee resulting in the reported exposures are contained in Appendix C.

Figure 6 shows Lmax, Lmin and Hourly Leq values obtained during the noisiest eight hour period recorded by the indoor noise monitor. The Lmax was relatively consistent ranging from 100 to 104 dBA, the Lmin ranged from 35 to 63 dBA and Hourly Leq consistently fell between 84 and 88 dBA. The highest levels are produced when employees or visitors enter the kennel areas causing the dogs to become excited and start barking. The barking continues until well after the individuals leave the kennel areas. Therefore, the maximum measured noise levels are indicative of the noise levels employees are subjected to while inside the kennel areas with the barking dogs. Comparing the noise level of 100 dBA to Table 3, an employee is allowed in the kennel areas up to two hours during an eight-hour shift before hearing protection is required.

The dosimeter results (less than 85 dBA TWA) together with the measured interior noise levels describe the employee noise exposures expected at Wag during very busy to peak occupancy days. Although the measured doses and levels do not require hearing protection or the establishment of a Hearing Conservation Program, because peak levels routinely fell between 100 and 104 dBA HMMH recommends that Wag install a "high noise level" placard on the doors to the kennel areas and provide hearing protection to employees since it is conceivable that employees could be exposed to these levels for significant portions of their shift on peak occupancy days.

Figure 6 Maximum, minimum and Hourly Equivalent Indoor Noise Levels



APPENDIX A NOISE METRICS

Decibel

The decibel, denoted dB, is the unit of measure used to represent the change in sound pressure, which is detected by the human ear. Since the range between the slightest and greatest sounds that we hear is extremely large, the decibel uses the logarithmic scale to compress this range to a more meaningful range with 0 dB representing the threshold of hearing. Most sounds we experience in our day-to-day lives vary between 30 dB (typical bedroom at night) and 100 dB (inside a loud nightclub).

A-weighted decibel

Per the recommendations of the Environmental Protection Agency, most community sound measurements, including aircraft, use the metric known as the A-weighted sound level, sometimes shown as dB(A) or more simply dBA. The A-weighted sound level is the industry standard for measuring and assessing environmental noise. Therefore, when describing environmental sounds, it is assumed, unless otherwise noted, that the A-weighting has been applied and the "(A)" is often left off. This metric is used because it replicates the sensitivity of the human ear in perceiving loudness of sound levels associated with community-type noise events. This correlation with human perception of loudness is the primary reason A-weighted sound levels are used to evaluate environmental noise sources.

Maximum noise level (Lmax)

The maximum sound level, denoted Lmax, is a slow response measurement of the maximum sound level during the noise event or measuring time period. Lmax is easily obtained with a variety of sound measurement instruments and is reported in dB. This metric provides no information on the cumulative noise exposure or duration of the noise, both of which impact human perception of annoyance.

Minimum noise level (Lmin)

The minimum sound level, denoted Lmin, is a slow response measurement of the lowest sound level during the noise event or measuring time period. Lmin is easily obtained with a variety of sound measurement instruments and is reported in dB. This metric provides no information on the cumulative noise exposure or duration of the noise, when couples with the Lmax, it describes the full range of noise levels detected.

Equivalent Sound Level (Leq)

The Equivalent Sound Level, denoted Leq, is a slow response measure of the noise exposure resulting from the accumulation of sound levels over a particular period of interest; an hour, daytime, evening, nighttime, a full day, or the duration of a noise event. Because the time period can vary, the applicable period should always be identified, or clearly understood, when discussing or presenting the metric, for example Leq1hr denotes a one-hour Leq (also referred to as HNL). Generally, noise

monitoring systems acquire one-hour Leqs to illustrate how the hourly noise dose rises and falls throughout a 24-hour period as well as how certain hours are affected by a few loud aircraft.

Conceptually, Leq may be thought of as a constant sound level over the period of interest, or measurement period, that contains as much sound energy as the actual time varying sound level with its normal peaks and valleys. It is important to recognize that the two signals (the constant one and the time-varying one) would sound very different from each other if compared in real life. Also, the "average" sound level illustrated by Leq is a logarithmic average, expressed as the "energy-averaged" sound level (not an arithmetic average).

Statistical Sound Levels (Ln)

Other commonly used noise metrics representing a constant sound level over the time period of interest are the statistical descriptors. For example, L_{90} (the noise level exceeded 90% of the time during the measurement period) is often used to estimate the ambient or background noise of the measurement site. Ninety percent is considered to be most of the time. Like the Leq, these statistical descriptors must have with them the time period over which the level was measured. These statistical parameters provide a quantitative method of characterizing the time variation of community noise. Other commonly used statistical descriptors are the L_1, L_{10}, L_{33}, L_{50}, L_{90}, and L_{99} that represent the level exceeded 1%, 10%, 33%, 50%, 90%, and 99% of the time measured, respectively.

Time-Weighted Average (TWA)

The time-weighted average metric averages the sound exposure over an 8-hour period, regardless of the actual work period. TWA represents a constant sound level equal to the employee's eight-hour dose.

Permissible Exposure Level (PEL)

OSHA has established the Permissible Exposure Level (PEL) as the maximum Time-Weighted Average (TWA) exposure calculated in dBA with the detector set to slow response and the reference level set to 90 dBA. The PEL is also referred to as a 100 percent "dose" of noise exposure for the shift duration. Since the standard utilizes a 5 dB exchange rate, exposure during an eight hour shift to a TWA of 95 dBA is equivalent to a dose of 200 percent, while a TWA exposure of 85 dBA is equivalent to a dose of 50 percent. PELs for varying shift lengths are established by 29 CFR 1910.95(b)(2).

APPENDIX B DOSIMETRY SUMMARY REPORTS

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Summary Report - Kelly
User:
Location:
Job Description:

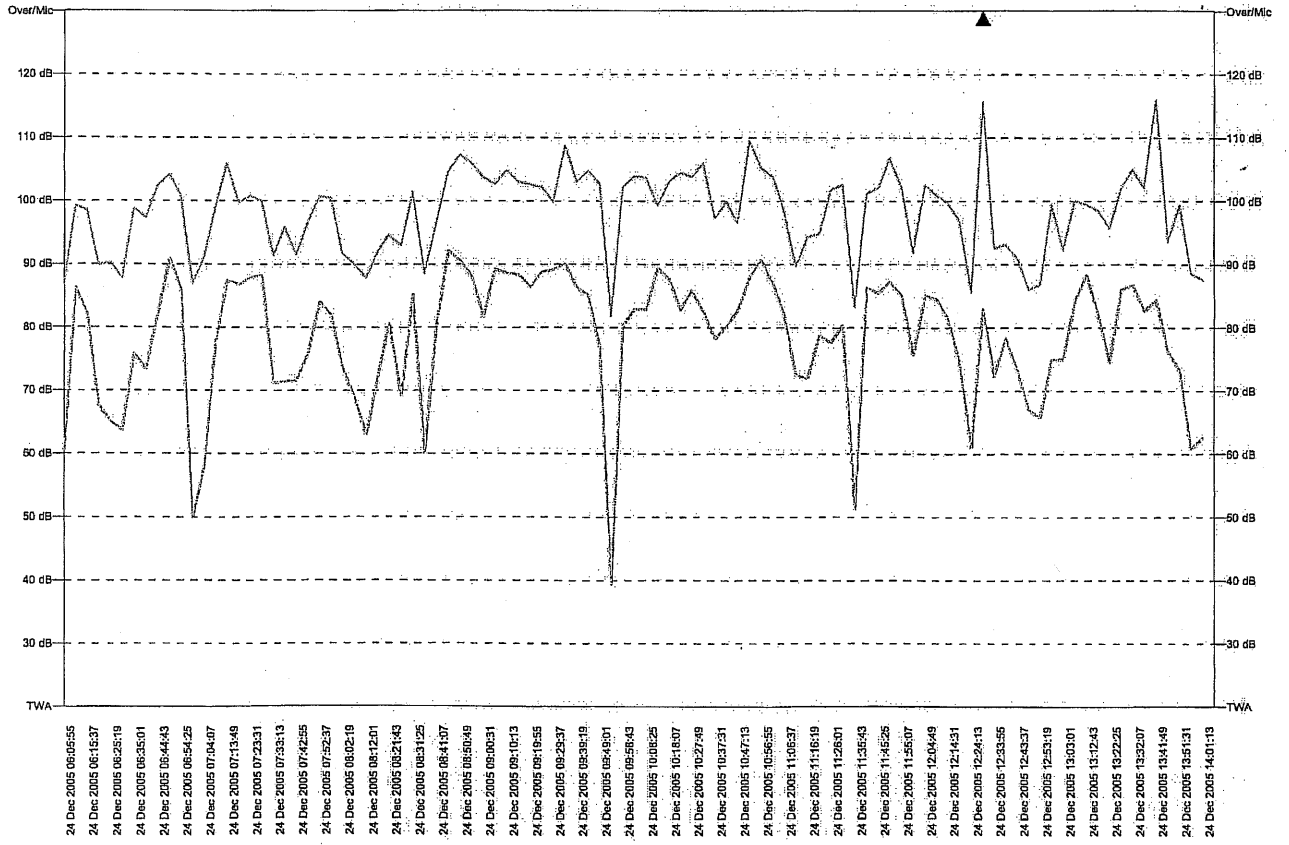
16 January 2006 10:18:45
HMMH
Wag Hotel
Employee Noise Study

Serial Number:	00403	Start:	24 Dec 2005 06:05:55
Model Number:	706	Stop:	24 Dec 2005 14:05:58
RMS Weighting:	A Weighting	Run Time:	08:00:03
Peak Weighting::	Unweighted	Pre Calibration:	24 Dec 2005 04:41:00
Detector:	Slow	Post Calibration:	26 Dec 2005 10:48:00
Gain:	0 dB	Deviation:	-0.7 dB
Sample Period:	1 second	Periods:	28803

Exchange Rate:	5	Dose:	36.9 %
Threshold:	80.0 dBA	Projected Dose:	36.9 %
Criterion Level:	90.0 dBA	Leq:	87.4 dBA
Criterion Duration:	8.0 hours	TWA:	82.8 dBA
		TWA (8)	82.8 dBA
L10:	90.5 dBA	Lmax:	115.8 dBA
L30:	82.5 dBA	Lpeak (max):	153.1 dB
L50:	75.5 dBA	Lep (8)	87.4 dBA
L70:	69.0 dBA	SE:	1.8 Pa²hr
L90:	61.5 dBA		

Note:

Time History



Max TWA

Summary Report - Anna
User:
Location:
Job Description:

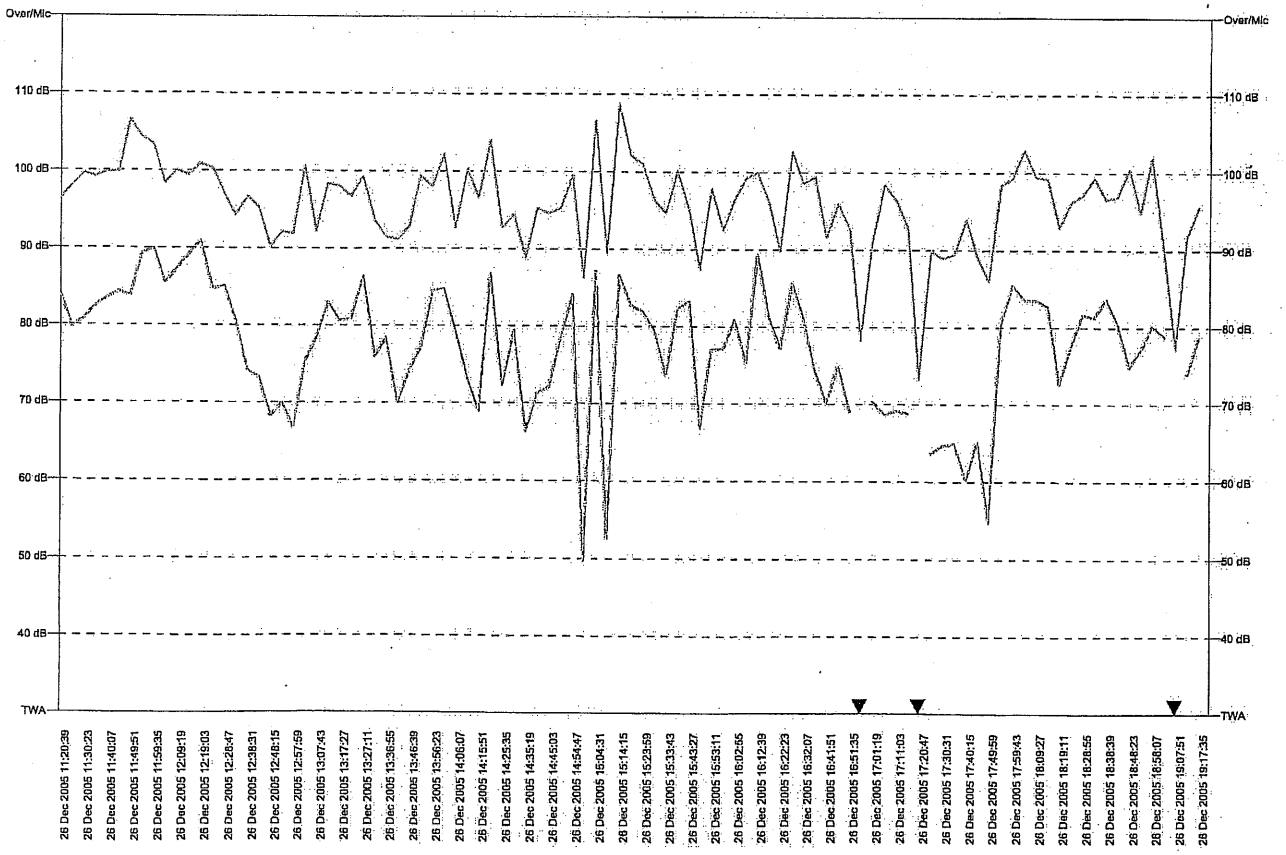
16 January 2006 10:16:47
HMMH
Wag Hotel
Employee Noise Study

Serial Number:	00403	Start:	26 Dec 2005 11:20:39
Model Number:	706	Stop:	26 Dec 2005 19:21:00
RMS Weighting:	A Weighting	Run Time:	08:00:21
Peak Weighting::	Unweighted	Pre Calibration:	26 Dec 2005 10:48:00
Detector:	Slow	Post Calibration:	None
Gain:	0 dB	Deviation:	---
Sample Period:	1 second	Periods:	28821

Exchange Rate:	5	Dose:	26.8 %
Threshold:	80.0 dBA	Projected Dose:	26.7 %
Criterion Level:	90.0 dBA	Leq:	85.0 dBA
Criterion Duration:	8.0 hours	TWA:	80.5 dBA
		TWA (8)	80.5 dBA
L10:	88.5 dBA	Lmax:	108.8 dBA
L30:	81.5 dBA	Lpeak (max):	129.9 dB
L50:	76.0 dBA	Lep (8)	85.0 dBA
L70:	69.5 dBA	SE:	1.0 Pa²hr
L90:	60.5 dBA		

Note:

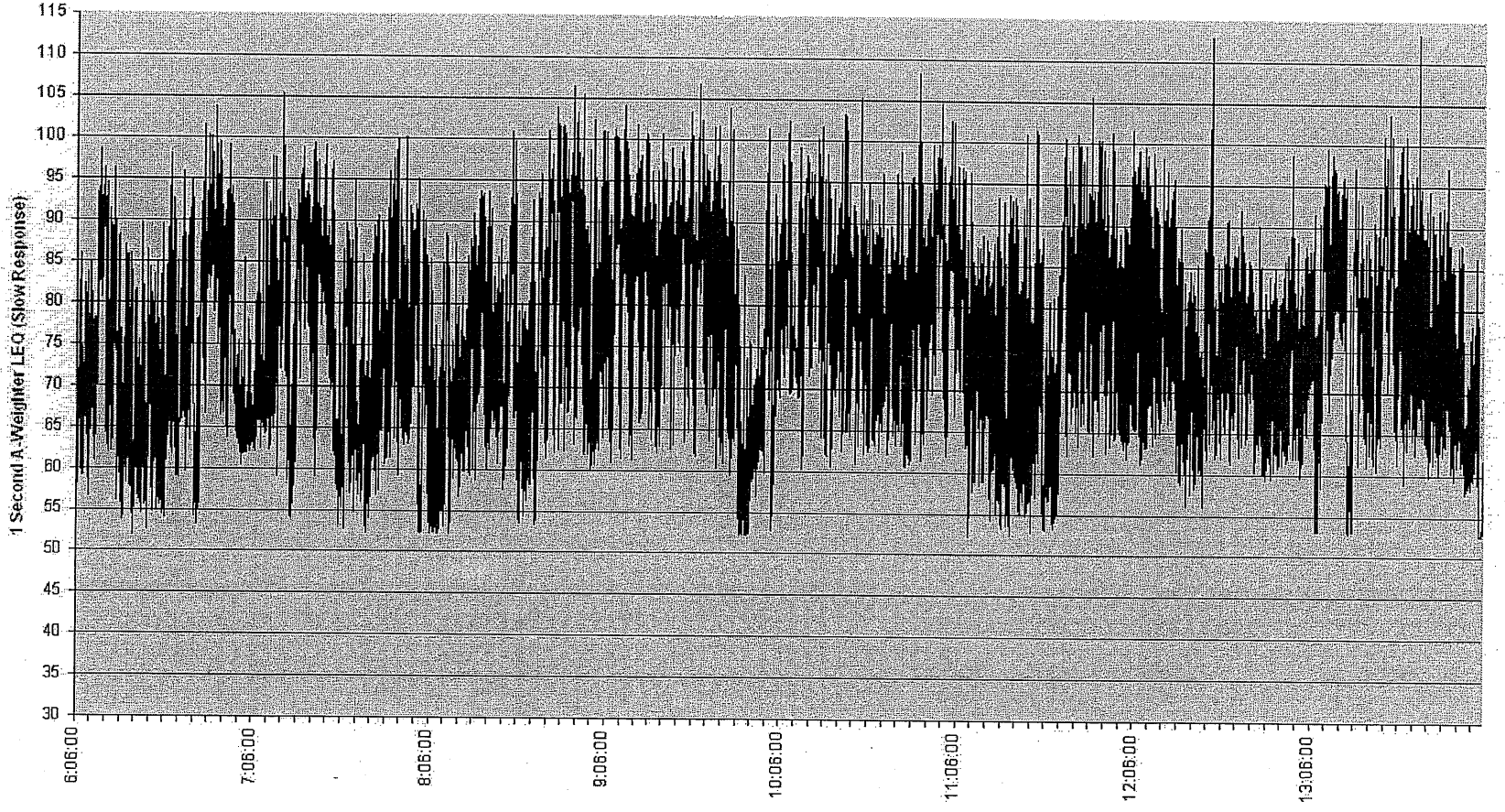
Time History



Max TWA

APPENDIX C DOSEMETRY TIME HISTORIES

Dosimetry Time History - Kelly



ATTACHMENT K
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